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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
RUTHKOSKY, MARK

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
01/12/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/668,161	SAKAUE ET AL.	
	Examiner	Art Unit	
	Mark Ruthkosky	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3 and 5-23* is/are pending in the application.

4a) Of the above claim(s) *5-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *2,3,22 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Request for Consideration

Applicants' request for consideration filed 10/3/2008 has been entered into the application file and considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-3 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 6,844,094.)

Kobayashi et al. (US 6,844,094) teaches a fuel cell system comprising a fuel cell having an anode, a cathode and an electrolyte film put there between; a fuel supply unit supplying fuel to the anode; and a gas supply unit having a pump, the pump giving negative pressure to the cathode so as to introduce gas containing oxidant to the cathode (see claims 1-12, col. 5, lines 30-end; col. 7, lines 1-30, col. 8, line 51.) The pump gives negative pressure to the fuel cell at both electrodes (see col. 6, lines 42-65.) Further, the pump may be supplied at the hydrogen gas supplying apparatus, (col. 13, lines 20-25.) An additional pump supplies positive pressure to the fuel supply unit (col. 6, line 66.)

The reference does not teach an exhaust flow path communicating with both the anode and the cathode and that the pump supplies positive pressure to the fuel supply unit. The reference teaches a second pump used to provide a positive pressure to the fuel supply by recirculating the hydrogen exhaust to the hydrogen supply (col. 6, line 28 to col. 7, line 30.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a single exhaust flow path communicating with both the anode and the cathode such that the pump taught in Kobayashi creates a negative pressure on the fuel supply system as taught in the air supply circuit of Kobayashi et al. (US 6,844,094.) The pump will also provide a negative pressure to the fuel supply in a manner similar to the oxidant supply as taught in the reference. Although the reference teaches recycling hydrogen to improve the performance of the fuel cell, one skilled in the art would recognize from the teachings of Kobayashi that the pump may be used for the fuel if the fuel exhaust is exhausted from the fuel cell without recycling. The reference shows that a pump creates a negative pressure for pulling a reactant through the fuel cell reaction path. The artesian would have found the claimed invention to be obvious in light of the teachings of the references. Thus, using one pump to provide both functions described in Kobayashi would be obvious to the skilled artesian based on the teachings of the reference.

Response to Arguments

Applicant's arguments filed 10/3/2008 with regard to the claims have been fully considered but are not persuasive.

Applicants argue that, “The outstanding Office Action, in the "Response to Arguments" section, states that the previous arguments are moot as a new rejection of Claim 2 under 35

U.S.C. § 103(a) is issued. However, the previous arguments submitted by the Applicants include arguments regarding the non-obviousness of Claims 2, 3, 22 and 23 as amended into the current form. For example, see the discussion from the second paragraph of page 9 through line 3 of page 11 of the amendment filed on October 18, 2007. The Applicants respectfully request reconsideration of these arguments. Further, Applicants respectfully request a response to these arguments if any new Official Action is issued."

These arguments have been addressed in the final rejection of 6/18/2007. With regard to applicants' arguments that modification of Kobayashi to omit the hydrogen circulating pump and add structure for a suction pump would not have been obvious to the skilled artesian, the modification of the reference does not require omitting said pump. Based on the teachings of Kobayashi et al. (US 6,844,094), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the pump of taught in Kobayashi in the hydrogen circuit at the exhaust portion of the circuit in order to create a negative pressure on the system as taught in the air supply circuit of Kobayashi et al. (US 6,844,094, col. 13, lines 20-25.) The pump will also provide a positive pressure to the fuel supply as taught in the reference by adding the exhaust gas to the supply hydrogen as noted in the rejection. No suggestion has been made to omit the hydrogen-circulating pump. As noted in the rejection, it would have been obvious to employ a single pump to provide a negative pressure to the oxidant and fuel supply passages, as taught in Kobayashi, and to provide positive pressure to the fuel supply passage in order to give a positive pressure as the second pump used in Kobayashi. The prior art recognizes that a positive pressure is supplied to the anode fuel supply in the fuel cell anode using a pump. Thus, using one

pump to provide both functions described in Kobayashi would be obvious to the skilled artesian based on the teachings of the reference.

Applicant argues that to produce the invention recited in independent Claim 2 using Kobayashi as a primary reference, substantial modifications would be required. This argument is not persuasive. While, modification to the structure would be required, such modifications would have been obvious to one skilled in the art at the time of the invention. Using the gas supply unit structure having a pump that provides negative pressure to the cathode so as to introduce gas containing oxidant to the cathode taught in Kobayashi (see claims 1-12, col. 5, lines 30-end; col. 7, lines 1-30, col. 8, line 51) in conjunction with the anode would have been an obvious modification to the structure since the same structure would be used for the anode and cathode flow paths. Further, the pump may be supplied at the hydrogen gas supplying apparatus, (col. 13, lines 20-25.) The pump gives negative pressure to the fuel cell at both electrodes (see col. 6, lines 42-65.)

Applicant argues that the omission of an element with retention of the element's function as set forth in the asserted modification of Kobayashi provided in the outstanding Office Action, is an indicia of non-obviousness and accordingly, Applicants respectfully submit that it would not have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to modify Kobayashi in order to omit the pump. This argument is not persuasive. The change in structure is not the omission of an element, but the use of a separate element to provide an equivalent function that would have been obvious to one skilled in the art at the time of the invention. Using the gas supply unit structure having a pump that provides negative pressure to the cathode so as to introduce gas containing oxidant to the cathode taught in Kobayashi (see

claims 1-12, col. 5, lines 30-end; col. 7, lines 1-30, col. 8, line 51) in conjunction with the anode would have been an obvious modification to the structure since the same structure would be used for the anode and cathode flow paths.

Further, Applicants argue that, "Kobayashi intends to discharge produced water from the cathode, and this intended use would be impeded or inhibited by the modification asserted in the outstanding Office Action." Applicants conclude that, "as the modification asserted in the outstanding Office Action would render Kobayashi unsuitable for its intended (and stated) use, the modification is not would not have been obvious to a person of ordinary skill in the art at the time the claimed invention was made."

These arguments are not persuasive. The modification of using the gas supply unit structure having a pump that provides negative pressure to the cathode so as to introduce gas containing oxidant to the cathode taught in Kobayashi (see claims 1-12, col. 5, lines 30-end; col. 7, lines 1-30, col. 8, line 51) in conjunction with the anode would not render Kobayashi unsuitable for its intended use. The invention of Kobayashi will be able to discharge produced water from the cathode in an equivalent manner, and this intended use would not be impeded or inhibited by the modification asserted. The operation will allow for the discharge of water in an equivalent manner (see exhaust of figure 1.) Further, on skilled in the art would have the knowledge required to remove water from a flow line using standard elements, such as a simple exhaust path, exchangers or condensers, well known in the fuel cell art.

Finally, Applicants respectfully request reconsideration of unexpected beneficial results provided by the invention recited in independent Claim 2, s discussed on pages 6 and 7 of the original specification, one benefit of the invention recited in Claim 2 is the prevention or

reduction of leakage of both the fuel and water continuously produced in the cathode while simultaneously bringing about re-use of the fuel and the water and a further steady supply of the fuel.

This argument is not persuasive. These results are not unexpected. The re-use of the fuel, water and a further steady supply of the fuel are taught in Kobayashi. The prevention or reduction of leakage of both the fuel and water continuously produced in the cathode is expected since one pump is used instead of two in the same manner as applied to the cathode of Kobayashi. The general state of the art has been identified by the examiner and made of record. Based on the teachings of the prior art of record, one of ordinary skill in the art at the time of the invention would find that the use of the gas supply unit structure having a pump that provides negative pressure to the cathode so as to introduce gas containing oxidant to the cathode taught in Kobayashi (see claims 1-12, col. 5, lines 30-end; col. 7, lines 1-30, col. 8, line 51) in conjunction with the anode obvious, as the invention is a predictable use of the prior art elements according to their established functions. The change would have been an obvious modification to the structure since the same structure would be used for the anode and cathode flow paths. There are a finite number of identified, predictable solutions for combining the can with the cover with a reasonable expectation of success. One of ordinary skill in the art using ordinary creativity, common sense and logic would find the claimed invention obvious over the prior art of record. (KSR International Co. v. Teleflex, Inc. 550 U.S., 82 USPQ2d 1385 (2007.) As noted in the rejection, it would have been obvious to employ a single pump to provide a negative pressure to the oxidant and fuel supply passages, as taught in the cathode fluid Kobayashi. The prior art recognizes that a pressure is supplied to the anode fuel supply in the fuel cell anode

using a pump. Thus, using one pump to provide reactant flow as described in Kobayashi would be obvious to the skilled artesian based on the teachings of the reference.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

/Mark Ruthkosky/

Primary Examiner, Art Unit 1795